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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/066,720	02/06/2002	Tuyu Xie	755-234/DPC	4053

7590 11/05/2003

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CANADA

EXAMINER

TSANG FOSTER, SUSY N

ART UNIT	PAPER NUMBER
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1745

DATE MAILED: 11/05/2003

4

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/066,720

Applicant(s)

XIE ET AL.

Examiner

Susy N Tsang-Foster

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 06 February 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2,3.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

## DETAILED ACTION

### *Information Disclosure Statement*

1. The information disclosure statements filed on 5/3/2002 and 9/15/2003 have been considered by the Examiner.

### *Claim Rejections - 35 USC § 102*

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1-20 are rejected under 35 U.S.C. 102(a) as being clearly anticipated by WO 01/52339 A.

See abstract; Figure 1; page 3, lines 8-21; page 7, lines 16-29; and claims 6-11 of the reference.

4. Claims 1-3, 5, 7-13, 15, and 17-20 are rejected under 35 U.S.C. 102(e) as being anticipated by Colbow et al. (US 2003/0003336 A1).

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Colbow et al. disclose a method of starting a solid polymer electrolyte fuel cell wherein the temperature of the fuel cell is increased when the temperature of the fuel cell is below a preferred operating temperature range by providing a fuel stream containing methanol to the fuel cell anode and facilitating methanol crossover and combustion wherein the methanol concentration or pressure can be adjusted in response to the measured parameter indicative of the fuel cell temperature (see abstract, paragraph 1 and Figure 1). If the pressure of the methanol is adjusted, the flow rate of the methanol would also be adjusted.

Specifically, Colbow et al. disclose a plurality of fuel cells in a fuel cell stack wherein each fuel cell comprises an anode comprising an anode flow field plate, an anode diffusion layer, and an anode catalyst layer, a cathode comprising a cathode flow field plate, a cathode diffusion layer and a cathode catalyst layer, and a proton conductive membrane; operating the plurality of fuel cells at an open circuit state, feeding at a fuel feed rate an aqueous methanol solution to the anode and feeding at an oxidant feed rate an oxidant to the cathode; allowing the methanol in the methanol solution to diffuse through the proton conductive membrane from the anode to the cathode and oxidizing the fuel at the cathode to generate heat thereby heating the fuel cell (paragraphs 2-5, 9, 22, 31-33, 53, and Figure 3).

After startup, the normal operating methanol concentration is less than the starting methanol concentration (paragraphs 33 and 47). Calculations show that 40 wt% of methanol is approximately 1.3 M and 25 wt% of methanol is approximately 0.81 M. The starting methanol concentration is about 1.5 M or higher (paragraph 33) which is greater than 40 wt%. In environments where the ambient temperature is below the operating temperature of the fuel cell, in particular below zero degrees Celsius, it is desirable to employ a methanol concentration of

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about 10 M or higher so that the freezing point of the fuel stream is sufficiently lowered where employing methanol concentrations greater than about 8 M at start-up, a freezing point of -25 degrees Celsius or lower can be obtained (see paragraph 44). The fuel supply system may receive a fuel outlet stream from the fuel cell stack and recirculate a portion of the fuel outlet stream into the fuel inlet stream without heating the recycled portion such that the fuel supply system does not need a heating element to heat the fuel inlet stream outside of the fuel cell stack (see paragraph 38). Since the temperature of the fuel cell can be controlled during startup by varying the concentration of the methanol solution (see paragraphs 1 and 53, and abstract) and the fuel outlet stream is recirculated, the temperature of the fuel solution fed to the anode can be controlled. During recirculation of the fuel outlet stream, the liquid water and methanol are recirculated back into the gas/separator 3 which also functions as a fuel reservoir (see Figure 1 and paragraph 45).

### ***Conclusion***

Any inquiry concerning this communication or earlier communications should be directed to examiner Susy Tsang-Foster, Ph.D. whose telephone number is (703) 305-0588. The examiner can normally be reached on Monday through Friday from 9:30 AM to 7:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached at (703) 308-2383. The phone number for the organization where this application or proceeding is assigned is (703) 305-5900.

The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

st/ *Susy Tsang-Foster*

Susy Tsang-Foster  
Primary Examiner  
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